

**CHAMAIRO: *MUSSATIA HYACINTHINA*—
AN ADMIXTURE TO COCA FROM AMAZONIAN
PERU AND BOLIVIA**

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INTRODUCTION

The custom of chewing coca, whether whole coca leaves in the Andes or pulverized coca in the Amazon, is a relatively well known practice (Plowman, 1979, 1981). However, very little has been written about the numerous admixtures employed in coca chewing or about the plant masticatories employed as coca substitutes.

Coca-chewing peoples in different ecological zones have discovered many alkaline source materials which serve to "sweeten" and potentiate the coca quid, apparently by increasing the absorption of the alkaloids by the mucous membranes (Rivier, 1981). The alkaline substances habitually added to the coca quid are derived from mineral (limestone, clay), animal (bones, sea shells) or vegetable (plant ashes) sources. The particular materials used and their preparation vary greatly from region to region, and some preparations may be very local.

The vegetable sources of alkali which serve as coca admixtures include the following: ashes of leaves (*Cecropia* spp., *Pourouma* spp., palms), stems (*Vernonia* sp.), bark (*Styrax anthelminticum* R. E. Schult.), roots (*Vicia faba* L., *Musa × paradisiacum* L.), fruits (*Theobroma Cacao* L., *Trichocereus* sp.), infructescences (*Zea Mays* L.) or whole plants (*Chenopodium Quinoa* Willd., *C. pallidicaule* Aellen, *C. ambrosioides* L.). Unfortunately, we still know very little about the chemical compositions of the ash residues of these plant materials, about their preparations for coca chewing or about their pharmacology in the mouth. Only two studies have considered in depth

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the chemical composition and function of these alkaline additives (Cruz Sánchez & Guillén, 1948; Rivier, 1981).

Plants or plant derivatives may also be added to coca to lend flavor or sweetness. In northern Peru, dried leaflets of *misquina* (*Abrus precatorius* L.) are added as a licorice-flavoring to coca; in southern Peru, the foliage of *pampa anis* (*Tagetes pusilla* HBK.) is chewed with coca or alone against the cold (Fisher, 1976). In the upper Amazon, tobacco paste or powder is frequently taken with the powdered coca characteristic of the region (Plowman, 1981). In the Colombian Vaupés, coca powder is sometimes flavored with the aromatic smoke of burning *brea*, the resin of *Protium heptaphyllum* March (Schultes, 1957).

A related topic of interest includes the plants which are employed as coca substitutes. These plants are used primarily when coca chewers exhaust their supplies of coca leaf or coca powder. Although there are probably many such plants which remain undiscovered, about a dozen have been identified to date. Of these, a few are still known only by local vernacular names and have not been botanically identified. In the high Andes, the leaves of *Dodonaea viscosa* L. (Greenish, 1904) and the foliage of *Werneria dactylophylla* Sch. Bip. (Hemsley, 1907) may be chewed. The latter is chewed to resist the cold. At lower elevations in the Andean foothills of Peru, the Campa Indians chew the leaves of *Cordia nodosa* L., a well known myrmecophyte called *tabaco chuncho*, to replace coca (Schunke, pers. comm.).

In the upper Amazon, several species are employed as substitutes for coca powder, including three apocynaceous trees, *Couma macrocarpa* Barb. Rodr. and two species of *Lacmellea*, and at least two wild species of *Erythroxylum*, *E. macrophyllum* Cav. and *E. fimbriatum* Peyr., both of which are recognized by natives as wild cocas (Plowman, 1981). Whether these or other coca substitutes act merely as placebo quids or have some other as yet undiscovered active constituents remains unknown. Both coca substitutes and admixtures merit intensified ethnobotanical and phytochemical study while it is still possible to investigate their use *in situ*.

CHAMAIRO: AN OVERLOOKED ADMIXTURE TO COCA

I first learned about *chamairo* in 1976 from the Peruvian plant collector José Schunke Vigo who was employed as my expedition assistant in the Huallaga valley of eastern Peru. Schunke had first encountered *chamairo* during previous botanical collecting work in the Chanchamayo valley, where he observed that the Campa Indians added *chamairo* bark to their coca. At that time, Schunke was able to identify *chamairo* as a liana of the Bignoniaceae, but he did not know the genus nor had he collected specimens for study.

After consulting several general works on Peruvian botany, I was unable to find any mention of *chamairo*. Later the same year, I again met with the plant while consulting collections of coca paraphernalia at the Ethnografiska Museum in Göteborg, Sweden. I found a piece of unidentified liana labeled *yarnayru* which had been collected by Nordenskjöld in 1922 among the Campa on the Río Azotiqui (affluent of Río Perené) in Peru (specimen no. 21.10.142). Nordenskjöld noted simply that *yarnayru* bark was chewed with coca. *Yarnayru* is almost certainly identical with *chamairo*, but I was not able to study further the Göteborg specimen nor to attempt a botanical identification based on the wood anatomy.

Returning to Peru for field work in 1978, I discovered *chamairo* bark for sale by herb dealers in markets in Lima (La Parada) and in the central market of Tingo Maria. This strongly suggests that the plant is used by the general populace and is still widely available. The material was sold as long strips of bark, sometimes doubled over, sometimes coiled and tied in small bundles. It was very fibrous and tough in texture and reddish or greyish brown in color. It had a bitter and astringent taste. In both markets, *chamairo* was being sold as an admixture to coca and was said to originate in the Chanchamayo region (Dept. Junín).

In 1979, Dr. John Elick, an anthropologist working on Campa ethnomedicine, provided additional data on the use of *chamairo*. Elick observed the use of *chamairo* among the Campa of Peru on the Pichis, Nazaratequi and Neguachi rivers. While most of the Campa coca users preferred lime as a "sweetener" to

coca, there were several who seemed to like *chamairo* (Elick, pers. comm.).

HISTORICAL RECORDS OF CHAMAIRO

While researching the literature on coca and its uses, two early references to *chamairo* were discovered. The historical record of *chamairo* dates from the year 1790, when the Franciscan missionary Agustín Sobreviela encountered the plant during his travels on the Río Apurímac in Peru. He wrote of meeting two Indians who were traveling downstream to collect *chamairo*, a “tree bark” which they said they chewed along with coca (Izaguirre, 1923: 325).

The second report appeared about 100 years later. Olivier Ordinaire, a French explorer who traveled among the Campas of eastern Peru, described the following encounter (Ordinaire, 1892: 131):

“Seeing my breathlessness and exhaustion, the Campa chief pressed me to chew with my coca a dry bark which he gave me. I did what he said and almost immediately felt a real sensation of well-being and tranquility. The Campas make use of this bark, which comes from a liana called *chumayro*, whenever they have to fight against fatigue. They always have a provision of it in the bag which they carry on their shoulder. When they have run a long distance or made violent exercise, as in the tapir hunt, or when they are caught in a thunderstorm, they do not fail to chew a certain quantity of this bark mixed with coca leaves which they also consume in quantity. But all those whom I was able to ask told me that they can do without coca more easily than without *chumayro*....

“The liana which bears this name and which the same [chief] Puchana showed me later in the forest, grows in the thick jungles where it attains the thickness of a man’s arm. The Indians cut it when it becomes as thick as a finger. They immediately strip the bark, the only part which they use, divide it into pieces about a foot long, dry it and store it in small bundles. To consume the bark, it only remains to remove, with a knife or a finger nail, the rugosities of a calcareous appearance which more or less cover it.”

A portion of Ordinaire's description also appeared in Valdizán and Maldonado's treatise on Peruvian popular medicine (Valdizán & Maldonado, 1922).

Chamairo is known also in Bolivia. The most complete data were supplied by the Bolivian botanist Martín Cárdenas who studied the plant and its use during the Mulford Biological Expedition in 1921. Cárdenas (1969: 396) reported that the plant grows in the region of the Río Enadere near Ixiamas, in the Province of Iturrealde in northern La Paz Department. In Rurrenabaque, the dry bark of *chamairo* is sold in coiled strips and, as in Peru, is closely associated with coca chewing. After a portion of coca is lightly chewed, a small piece of *chamairo* is added and finally formed together into a quid, to which is added a pinch of plant ash which is carried in a cow's horn. The effect of the mixture was said to resemble sweetened coca.

Cárdenas attempted to explain the derivation of the word "chamairo", which he believed to be Quechua in origin. The prefix "chama", according to Cárdenas, means "delight" and "iru" is a kind of forage grass which is used to make a wick or torch for lighting fires. He thus interpreted "chamairo" to mean "wick of delight", in reference to the pleasant effects produced upon chewing the vine.

Another Bolivian, Oblitas Poblete (1969), provided additional information on the use of *chamairo* as a medicinal plant:

"*Chamairo* is a liana which is found in the region of the Beni. When chewing coca, it serves to sweeten the leaf and make it more digestive. When drunk as an infusion, *chamairo* eliminates fatigue from the body. It is known as a stomachic and tonic and is much employed for colic and flatulence. The ash is used to dust wounds which then heal easily. Coca leaf chewed with *chamairo* is applied in a cataplasm to wounds, bruises, blows and sprains."

IDENTIFICATION OF CHAMAIRO

Cárdenas was the first botanist to identify the genus and family of *chamairo* as *Mussatia* in the Bignoniaceae, although he did not recognize the species. He also apparently collected an herbarium specimen in the Province of Caupulican in La Paz

Department with which he illustrated his brief account of *chamairo* (Cárdenas, 1969). However, no duplicates of this collection have been located among the Mulford Expedition collections at the New York Botanical Garden (Schofield, 1980, pers. comm.), at other major U.S. herbaria, nor in Cardenas' personal herbarium which is now preserved at the Instituto Miguel Lillo, Tucumán, Argentina.

In 1964, Dr. Gerald Weiss, an anthropologist at Florida Atlantic University, collected an ethnobotanical voucher specimen of *chamairo* among the Campa Indians of the Río Tambo in eastern Peru. Consisting of leaves and a piece of stem and preserved at the Field Museum, this specimen has been positively identified as *Mussatia hyacinthina* (Standl.) Sandw. by Dr. Alwyn Gentry, a specialist in American Bignoniaceae. A second authenticating specimen was collected by Gentry, Schunke and Aronson in the Huallaga valley of Peru near Tocache. This collection was recognized in the field as *chamairo* by Schunke and botanically identified by Gentry as *M. hyacinthina*.

The genus *Mussatia* includes only two species: *M. hyacinthina* which ranges from Mexico south to Guyana and Bolivia; and *M. Priourei* (DC.) Bur. ex K. Schum., which occurs in the Guianas and Amazonian Brazil. To my knowledge, there have been no previous reports of economic uses for either species, and, according to Gentry (pers. comm.), the chemistry of *Mussatia* is completely unknown.

From the data presented here, it is clear that *chamairo* is rather widely employed as a coca admixture from central Peru south to northern Bolivia. It is employed mainly as a flavoring to sweeten coca but may also be chewed alone for its euphoric and medicinal effects. In view of these properties, *chamairo* bark should be examined for potential pharmacologically active constituents.

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Plate 5. Chamairo bark as sold in market in Tingo María, Huánuco, Peru (*Plowman 7608*).

PLATE 6.

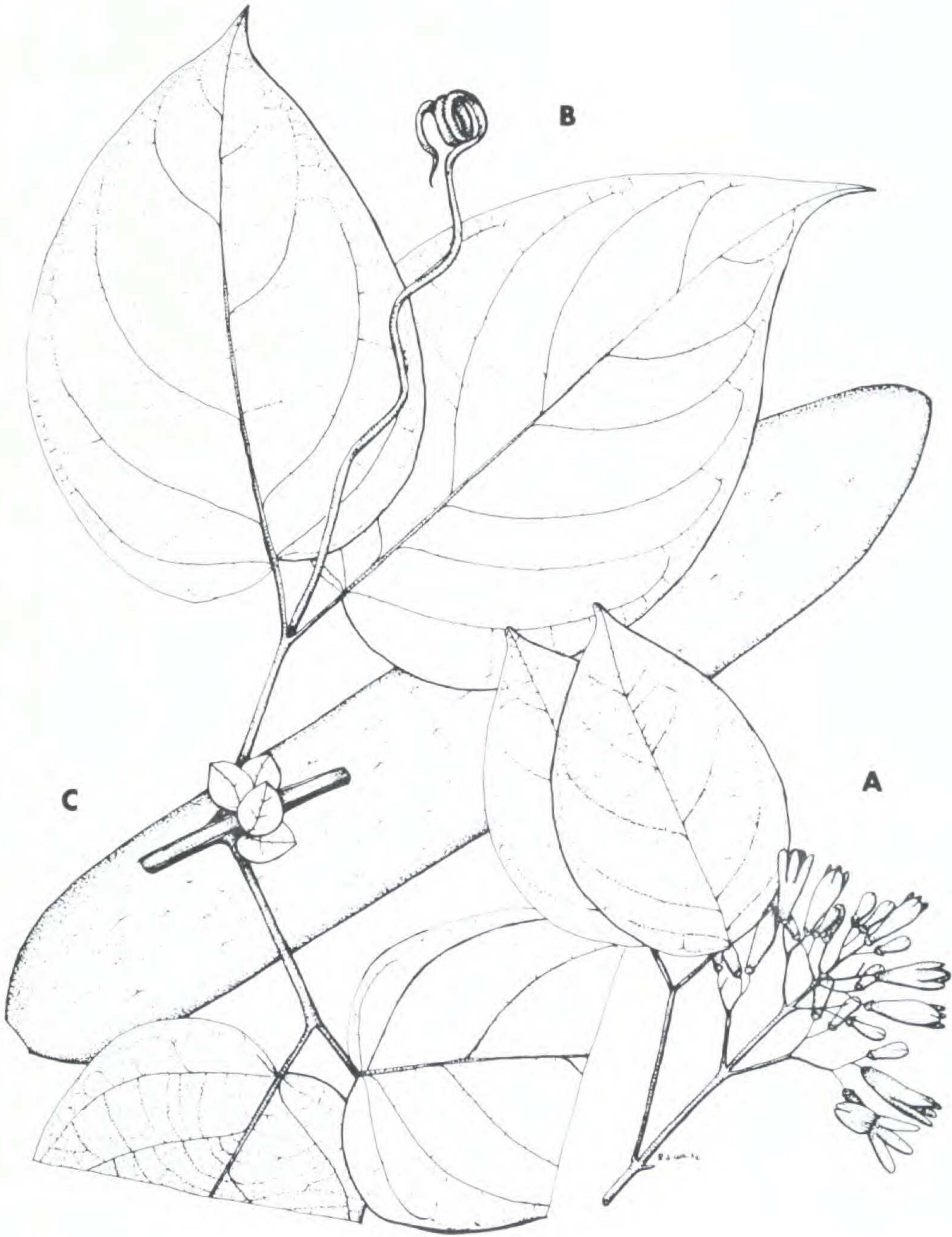


Plate 6. *Mussatia hyacinthina*. A, inflorescence. B, leaves. C, fruit. From Flora of Panama. Used by permission of the Missouri Botanical Garden.